

STCP Quick Reference Chart

OFF/RVS = Control key (ctl)

ctl ESC = (8032) Enter line transmit mode

ctl > = (other than 8032) Enter line transmit mode

ctl RETURN = Alpha case lock function.
(Characters A-Z.)

ctl M = Enter menu.

ASCII Protocol Control Codes

ctl n = Where n = 0 - 9. Quick
Read. Ex: ctl 0 .

ctl S = XOFF. Momentarily
stop sending data.
ctl Q = XON. Continue
after XOFF.

File Formats: 0 = Basic
1 = MAE
2 = Binary
3 = ASCII

Data Formats:

Type	# Data Bits	Parity	# Stop Bits	
0	7	EVEN	2	
1	7	ODD	2	
2	7	EVEN	1 *	(Compuserve, etc.)
3	7	ODD	1	
4	8	NONE	2	
5	8	NONE	1 *	(Compuserve, etc.)
6	8	EVEN	1	
7	8	ODD	1	
		(* = Most Common)		

STCP warm start reentry into STCP:

From Basic = SYS 8195

From Monitor = .G 2003

Transmission Errors:

PFO Indicators:

P = Parity ERROR. F = Framing Error. O = Overrun Error.

Basic Control:

\$200C	8204	Char. I/O to Modem	\$2013	8211	Put Char. to modem
\$200D	8205	Set Program Control	\$2016	8214	Clear Modem Buffer
\$2010	8208	Get Char. from Modem	\$2019	8217	Reset ACIA

STANDARD TERMINAL COMMUNICATIONS PACKAGE

\$129.95

(STCP)

- Turns ordinary Commodore Computer into a sophisticated smart terminal.
- Can also be controlled by user provided Basic or Machine Language program in order to provide a Bulletin Board or an automated Telemetry System. (i.e. To provide an automated remote site controlled from a central location.)
- Includes ACIA-based Hardware Interface Board (Installs in minutes - no special tools).
- Works with inexpensive or intelligent RS232 Modems.
- Upload/Download to/from disk drives.
- Outputs to Commodore or ASCII type printers (Device 4,5, etc.).
- Automatic Modem Receiver buffer control via standard ASCII XON and XOFF protocol control codes.
- Communicates in Industry Standard ASCII.
- Features Status Line at top of screen with most important items in blinking format.
- Clock which constantly displays time.
- Alarm clock which signals upon time out.
- Menu Driven.
- Ability to send commands to disk drive to Rename, Scratch, etc.
- Translates files in 4 different file formats.
- Approximately 6K Machine Code.

STATUS LINE FOR 80 COLUMN PETS:

PFO IOO OOO C P <Dn >Dn ? F BELL = 12:30:00 LEDGER.BAS 12:14:06

STATUS LINE FOR 40 COLUMN PETS:

PFO IOO OOO C P <Dn >Dn ? F 12:14:06
O:STARTREK.BAS BELL = 12:30:00

HARDWARE AND SOFTWARE INCLUDED WITH THIS PACKAGE!!
You need just supply an RS232 Modem.

Checked items below indicate which
equipment this particular copy of STCP
will run on.
COMPUTER:

2001-32K with 3.0 ROMs
4001-32K and 2001-32K with 4.0 ROMs
8032

SN#: 166

DISK DRIVE:

4040, 2040, 2031
8050
PEDISK II



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Introduction

The EHS Standard Terminal Communications Package (STCP) is designed to run on the following Commodore equipment:

CPU	Screen	Memory	Disk Drive
8032	80 Column	32K	4040, 8050, or PEDISK II
2001	40 Column	16 or 32K	4040, 8050, or PEDISK II
4001	40 Column	16 or 32K	4040, 8050, or PEDISK II
4001	80 Column	16 or 32K	4040, 8050, or PEDISK II

- Notes:
- 1-) If your CPU is a 2001 that was upgraded to 4.0 Basic, you should obtain the 4001 version.
 - 2-) If your CPU is a 4001 that was modified to expand the the screens display to 80 columns, you should obtain the 8032 version.
 - 3-) The version of STCP that will work with the CGRS PEDISK II is available on 40 or 80 track 5 1/4 inch and IBM 8 inch diskette.
 - 4-) Thus a version of STCP is available for practically any Commodore computer excepting the old "small keyboard" PET that has the original 1.0 ROMs.

STCP software will drive multiple disk drives and both Commodore printers like the 4022 and ASCII type printers like the C. ITOH Starwriter.

INSTALLATION

- 1- Turn power off to your system.
- 2- Open the cover on your Commodore Computer and plug in the RS232 Interface Board and connect to your modem as described in the instructions with the board. The board should be inserted into an appropriate ROM socket as follows:
8032 = UD11 2001/4001 = UD4
- Insure that you plug in the board properly. Improper installation could damage both the board and the computer.
- 3- Power up your PET and modem.
If your modem has a Half/Full Duplex switch, set it to Full.
- 4- Insert the STCP disk in drive 0 (right hand drive).
- 5- For 4001 and 8032 computers, press and hold down SHIFT key then press RUN key.
For 2001 computers, type: LOAD "*",8 then type RUN.
For all computers using PEDISK disks, type: !RUN "STCPST:0".
This loads the STCP starter program. Respond to subsequent messages that configure STCP per your system arrangement.

Default responses to the messages are provided to aid you in getting started. If you want different defaults, just change the PRINT statements in the STCPnn.STARTER program on the STCP diskette.

- 6- When all configuration messages have been answered, the STCP terminal software will be automatically loaded.

Immediately after step 6, the screen will display a status line at the top of the screen displaying the time and various other items. It may take a few seconds for the time generator to get started. When started, the time will be displayed in hours, minutes, and seconds.

The other items in the status line are illustrated via the following callouts:

STATUS LINE FOR 80 COLUMN PETS:

```

0      1      2 3 4 5      6      7      8 9      10      11      12
↓      ↓      ↓ ↓ ↓ ↓      ↓      ↓      ↓ ↓      ↓      ↓      ↓
*PFO* 100 000 C P >Dn <Dn ? F BELL = 12:30:00 LEDGER.BAS 12:14:06

```

STATUS LINE FOR 40 COLUMN PETS:

```

0      1      2 3 4 5      6      7      8 9      10
↓      ↓      ↓ ↓ ↓ ↓      ↓      ↓      ↓ ↓      ↓
*PFO* 100 000 C P <Dn >Dn ? F 12:14:06
0:STARTREK.BAS BELL = 12:30:00
      ↑              ↑
      11             12

```

Callout

Description

- | Callout | Description |
|---------|---|
| 0 | ACIA data reception error indicators:
P = Parity, F = Framing error, O = Overrun error.
If no error then this contains "*****". |
| 1 | Hex Code of current ASCII character received from the modem. |
| 2 | Hex Code of current ASCII character transmitted to the modem.
If this changes to "O?" then either the RS232 Interface Board is not installed or the board is defective. |
| 3 | Normally blank. If this position ever changes to a "O", then there has been an overflow in STCP's modem receiver buffer. STCP incorporates a 100 character buffer for the modem receiver. Whenever this buffer exceeds 70 characters, an ASCII XOFF protocol control code is sent to the host requesting that transmission be momentarily halted until STCP sends an XON protocol code. When the buffer is flushed below 70 characters, the XON is sent. If the host computer does not recognize the XOFF and the buffer fills passed |

100 characters, characters will be lost. You will be informed via the "O" in the status line. This condition should never occur if the host computer properly processes ASCII

XON and XOFF control codes.

- | | |
|----|---|
| 4 | Normally blank. When a blinking "C" occurs, this indicates that the RVS/OFF key (Control Key) has been pressed. When a blinking "W", this indicates that the host computer sent an ASCII XOFF requesting STCP to wait until an XON before resuming transmission. Think of the "W" as meaning "Host Wait Request". |
| 5 | Normally a blank. When a blinking "P", this indicates that the printer is turned on and output will be directed to it |
| 6 | Normally a blank. When >Dn appears, this indicates that data is being saved to disk. n is a code (0-3) which indicates the type file being saved. |
| 7 | Normally a blank. When <Dn appears, this indicates that data is being read from disk. n is a code (0-3) which indicates the type file being read. |
| 8 | This is the error message indicator. All messages which have this character as the first character of a line will be displayed in inverse video. |
| 9 | Transmission mode. L = Local Mode, F = Full Duplex, H = Half Duplex. |
| 10 | Time at which screen will flash and your computers internal bell (if you have one) is to ring.
Note, 2001 and older small screen PETS do not have a bell. |
| 11 | Any disk filename or disk command entered appears in this position. |
| 12 | Current time displayed in hours/minutes/seconds. |

Immediately after loading the STCP software, you are in Local mode - note the "L" in the status line at callout 9. Local mode means that all transmission is kept local to the terminal. Thus local mode does not send or receive from the modem.

To fully understand how to use STCP, lets become familiar with some basic operations. Commodore computers do not have a control key. STCP software simulates one via the OFF/RVS key. Lets experiment. First press the OFF/RVS key. Note that the "C" indicator flashes in the status line. Press OFF/RVS again and it goes off. The state of the "C" indicator changes each time you press the OFF/RVS key. The "C" indicator indicates that the control key has been pressed and the next key pressed forms the control code. For example, to send a control C, press OFF/RVS (note the "C" in the status line), then press C.

Note that there is a solid non-blinking cursor present. This indicates that you are in character by character transmission mode. Each time you type a character, it is instantly transmitted. Screen editing functions such as cursor up, down, etc. will not function. The INS/DEL

key will function like the normal DEL function as it removes the character to the left of the cursor and the CLR/HOME key will clear the screen. You can still cursor to a line on the screen, make a change using normal screen editing, and send the entire line. To do this, you must first enter the STCP line transmit mode. This is done via control ESC or control > if you do not have an ESC key. (Control ESC - press OFF/RVS key then ESC key.) When you type control ESC, the cursor will change from solid to blinking. The cursor will revert back to the solid cursor immediately after you press RETURN. Unlike the character by character mode, the line transmit mode waits until you type RETURN and then sends the whole line as a single burst of characters.

Lets try it. In the character by character mode (solid cursor), type:

LINE XMIT MODE

then press RETURN.

Now enter line transmit mode via control ESC and cursor up and use normal screen editing functions to change XMIT in the line just typed to TRANSMIT. Then hit RETURN. Easy as pie! Right? Wrong? Or would you, rather play Interlude?

Commodore provides a shift-lock key that converts characters to upper case. Unfortunately, it converts all characters including special symbols, RETURN, etc. STCP provides an Alpha case lock that only makes characters A thru Z upper case. Often an Alpha case lock is more useful. Alpha case lock is set via control RETURN - press OFF/RVS then RETURN. Press control RETURN again and the Alpha case lock is cleared. Lets try it, type: "the stock market is going" then press control RETURN. Now type: "NOWHERE" then press control RETURN a second time, and type: "somewhere". Remember, control RETURN only makes A-Z uppercase.

There are three UART error conditions that could occur in data received from the modem. These indicators are located at the start of the status line in the "*PFO*" area. If an ACIA error is detected, it will be displayed as:

*p*** = Parity error. This could be because of a random noise picked up in reception. If this error occurs immediately after you exit the menu, it could be that you have configured STCP with the wrong parity.

F = Framing error. This occurs when Start and Stop bits do not properly "frame" the data bits. This could be because of a random noise picked up in reception. If this error occurs immediately after you exit the menu, it may be that you have configured STCP with a different bits per byte value than that of the host computer.

***0* = Receiver overrun. This will occur if STCP should fail to service the modem before the RS232's ACIA receiver buffer is overwritten. This should never occur as STCP software has built in checks to prevent overrun errors.

A combination of errors could occur such as *PF**, *P*0*,

PFO, etc. Once an error is detected, the associated indicators remain set until you enter the STCP's menu and then exit. Upon exit, the error indicators clear to "*****". Thus if you download a lengthy file, you need not feel you have to meticulously watch the data for errors because STCP will hold them in the status line for later review. These ACIA errors indicate that one or more characters were lost in reception. You have to decide if the received data was critical and whether you should "redo from start".

Now lets go to the STCP menu. Press control M (press OFF/RVS then M). Note that a full screen menu will be displayed showing the options available. To select an option, press the associated key. For example, type 'T' to set the timer. Let's try it. Enter a value one minute passed the currently displayed time. Example: 07:46:00 if the time currently displayed is 07:45:00. You must enter the colons. Check your entry on the status line. If its in error, just press 'T' and try again. Now wait until the screen flashes and the bell sounds. Sorry, only the screen flashes if you do not have the built in bell. This feature is useful if you are connected to a time sharing computer system that charges by the hour and you don't want to get carried away with the charges. Maybe your wife says "Leave that computer at 6:30 and come to supper or else". If your's is like ours, you better be there at 06:30:00.

An explanation of each of the other functions follow:

Menu Items

- @ Set baud rate to 300 or 1200 baud. Currently only 300 baud is implemented. 1200 baud capability will be provided at no cost when we get it developed.
- F Full-Duplex mode. Host computer should echo any character you type. Note "F" in the status line. The modem must be connected and powered or the system may "hang up". This is the most common transmission mode. If you observe that nothing you type appears on the screen, try Half-Duplex.
- H Half-Duplex mode. Host computer should not echo characters you type. Note the "H" in the status line. The modem must be connected and powered or the system may "hang up". If everything you type appears double, try Full-Duplex mode.
- L Local mode. Terminal isolates itself from modem. Note "L" in status line.
- M Go to Machine Language Monitor. You can return to STCP via .G or .G 2003.

- B Go to Basic. Return via SYS 8195.
- T Set audible timer. Note the status line displays the time the bell will ring as "BELL = hh:mm:ss"
- E Change error indicator. Any message sent to the screen where the first character of a line matches the error indicator is displayed in inverse video. Most computer installations have a convention that distinguishes error messages. Example: The DEC 10 Computer uses "?" as first character of one class of errors and "%" for another. The purpose of the error indicator is to highlight certain error messages. Try it. In local mode, press RETURN and then type
? ERROR AT LINE 1200.
Note that it is displayed in inverse video. Another use is to make the error indicator the same as the host computers prompt character. This will then highlight in inverse video each command you enter.
- D Disk command. Use DOS wedge commands for 4040 and 8050 drives. Example: "S1:TEST" "R1:TEST.NEW=TEST.OLD" "\$0" etc. Be sure and enclose the command in quotes. Possible forms are:
- | | |
|----------------------|-------------------------------|
| "\$0" or "\$1" | = directory |
| "S0:name" | = scratch file on drive 0 |
| "S1:name" | = " " " " " 1 |
| "CO:name=x1:namey" | = copy file from disk to disk |
| "C1:name=x0:namey" | = " " " " " " " " |
| "I0" or "I1" | = initialize drive |
| "N0" or "N1" | = new drive |
| "D1=0" or "D0=1" | = duplicate (backup) diskette |
| "R0:newname=oldname" | = rename a file |

To send a command to a disk drive that is not device 8, precede with "D" and the device number. For example, to output the directory on device 9, enter: D9 "\$0"

Use standard DOS mode commands for PEDISK II systems.

Examples: P = Print Disk Directory.
K = Kill (scratch) a file from disk.
U = Go to disk utility.
a) Format a disk.
b) Backup a disk.
N = Rename a file.

You will be prompted for all needed parameters such as filename, disk drive number. etc.

- P Toggle printer on or off. Typing a "P" causes the printer to be turned on. A second time and its turned off.

Note that a "P" appears in the status line when the printer is turned on. Nothing is sent to the printer until you exit the menu via "X".

- W Write to disk. This causes STCP to begin storing information received from the modem to a disk file. When the message "FILENAME?" appears, respond with the name of the file. Enclose the name in quotes. Example: "1:C80.DOC" for 4040 and 8050 disk drives, "C80DOC:1" for PEDISK. The default is disk drive device 8 for 4040 and 8050. To specify a write to say disk drive device 9, precede with D9 as follows: D9 "1:C80.DOC". Another message will appear requesting the format of the file - whether it is to be stored as a Basic, MAE, Binary, or ASCII file.
- R Read from disk. See W command.
- C Close disk file. This is used to close the write disk file or a prematurely terminated read file. Normally a read file is automatically closed by STCP when end of file is detected.
- K Kill STCP and reset system.
- X Exit Menu and return to terminal communications mode.

If STCP ever appears to "hang up", check the area of the status line where the control key indicator is located. If it ever changes to a blinking "W", then the terminal program has received a control S (XOFF) from the host computer. But, you can exit this condition by simply pressing the cursor down key. Remember, a blinking "W" indicates that STCP is "waiting" for the host computer to send a control Q or XON. To illustrate the blinking "W" concept, try the following experiment:

- 1- Insure that you are in Local terminal mode. An "L" appears in the status line.
- 2- Enter control S (press OFF/RVS then S)
- 3- Note that a blinking "W" appears in the status line. What you have done is to enter a control S or XOFF that was sent back to STCP because it was in local mode. This causes STCP to wait until an XON is sent.
- 4- Verify that any key you press is not displayed on the screen. The keyboard is locked out.
- 5- Press cursor down key. Note that the blinking "W" disappears. The cursor down key simulates that a control Q was received.
- 6- Now you can type characters and they will appear on the screen.

Exactly what this means is that a "W" in the status line indicates that the host computer has just sent a control S (XOFF) indicating that you are to wait until reception of a control Q (XON) before sending any

more data. When STCP receives the control Q, the "W" will dissappear. Thus the cursor down is used to abort a hosts XOFF request.

Disk File Format Basics

All communications between the terminal and the host computer is in Industry Standard ASCII. To transmit/receive a file to/from the host computer may require translation of the file to ASCII if to read from disk, or translation from ASCII if to write to disk. STCP supports four disk file translation formats. They are:

- 0 BASIC - All BASIC programs are stored on disk in a mixed binary and PETASCII file format.
File type is Program.
- 1 MAE - The EHS MAE Assembler/Editor uses a mixed Binary Coded Decimal (BCD) and ASCII file format.
File type is Program.
- 2 BINARY - Machine language object code is stored in binary format.
File type is Program.
- 3 ASCII - A pure ASCII file is just that - 100% ASCII.
File type is Sequential.

STCP establishes communications between the terminal and the host computer using ASCII character transmissions. Thus if a Basic program is to be sent to the host, you must tell STCP the file type. STCP uses this information so it will know how to translate the file to ASCII.

Most host computers have commands to display the contents of a file on the terminals screen. For example, DEC host computers have the command: .TYPE filename. When this is entered, the file is sent to the terminal in ASCII. The STCP can perform internal translation of this ASCII data to one of the 4 PET file formats: BASIC, MAE, BINARY, or ASCII. Assume for a moment that the host computer has a Basic program named ANIMAL.BAS that you would like to run on your PET. Simply enter the menu, select "W" item to write to disk. Use the Basic file format (0). Next, exit (via "X" menu item) to terminal mode and enter an appropriate host command which displays the contents of the file. When the file has been completely displayed, reenter the menu and use the option to close the file. What do we have now? We have a copy of the program on our disk that is in Commodore Basic format and ready to load and run. There may be some minor changes required before we can actually run this program on the PET. For example, DEC 10 Basic raises a number to a power via 2**2. In Commodore Basic, we would change this to 2^2. You may find some Basic instructions that are somewhat different but we are sure that you can easily change these to run on your computer.

To upload a Commodore Basic program to the host computer, simply invoke the host computers text editor and enter insert mode. Then enter

the STCP's menu, select the Read a disk file item with format type Basic. STCP will translate this file from Basic file format to ASCII and send it to the host computer in pure ASCII. You do not have to close the read file as STCP will automatically close the file when end of file is reached.

MAE files can be similarly transferred to the host and other file types can be used to accomplish your intended purpose.

STCP can be used to do local file translations. For example, assume you have a Basic program that needs extensive editing and you would like to use the MAE's text editor to make some changes. What we need to do is enter local mode, select to Read in Basic file format, and also select to simultaneously Write in MAE file format. As soon as we exit the menu, STCP will immediately begin reading the Basic program and translating it to ASCII, then translating ASCII to MAE format. This is done very fast as STCP is all machine code.

STCP Example Tasks

Extract the ASCII file HAMARB.BAS from the host computer:

Control M	< to enter STCP menu.
W	< select write to disk option. Use file type 0 for Basic format.
X	< exit menu.
.TYPE HAMARB.BAS	< enter a similar host computer command to list the file. This may vary depending on the host computer.
Control M	< to reenter the STCP menu.
C	< to close the write file.

Send the Commodore Basic file STARTREK to host computer:

.MAKE STAR.BAS	< execute host computers text editor and invoke insert text mode.
*I	< This may vary depending on the host computer.
Control M	< enter STCP menu.
R	< select read from disk option. Use file type 0 for Basic format.
X	< exit menu.
	File will be read and transmitted immediately after you exit. Wait until done listing. Remember, all read files are automatically closed when EOF is encountered.

PET to PET File Transfer

STCP can be used to accomplish a PET to PET transfer of a program or data file. To do this:

- a) Both PETs should be in Half-Duplex mode.
- b) If your modem has an answer/originate switch, the calling PET should be in originate and the answering PET in answer position.

NOTE: Some modems do not have a switch and accomplish this automatically.

On some cue, one PET should enter the menu and select the Write File option while the other should select the Read File option. The PET that is to receive the file (i.e. the one that is to write to disk) should exit the menu first. A good way to do this is the PET that is to receive the file should enter the menu first, select the write option, exit the menu, and then type READY TO RECEIVE and press return. The user at the PET that is to send the file will be waiting for this message who then enters the menu, selects to read the file, and then exits the menu. Upon exit, the file will be read and transmitted to the receiving PET.

STCP Quick Read

STCP provides a quick and convenient way to load often used data and command strings from disk with a minimum of key strokes. This is called Quick Read. Ten different Quick Read files can be created. To perform a quick read, type control n where n is a number from 0-9. STCP will then read the ASCII disk file n.*. For example control 2 will load any disk file named 2.*. Note that the * is the Commodore wild card character. Thus control 2 would load the file named 2.LOGON.DEC10, or 2.OFF, etc. You can use the Quick Read feature to perform a logon, perform often repeated keyboard operations such as editing functions, or compose some text prior to logging onto a system in order to save on connect time and phone charges.

To create a Quick Read file, enter Local mode, select the write disk file item with file type 4 (ASCII). Name the file anything you want except that the first character must be a numeral and the second character a period (.). An example filename for Quick Read 4 would be 4.EDIT. Then exit the menu to terminal mode and type exactly what you want to appear when you do the quick read. When done, close the file.

We have reserved Quick Read number 9 (control 9) to contain items that we forgot to put in the manual or to more fully describe items that users write to us about or to describe latest improvements. To obtain a

listing of this information, turn on the printer ("P" menu item), enter local mode ("L" menu item), exit to terminal mode ("X" menu item), and type control 9.

Program Control of STCP

A Basic or Machine Language program can be developed to control STCP. The following are a number of entry points that makes this possible:

Address in Hex	Decimal	Description
200D	8205	Inform STCP that a program will control transmission. This also resets the ACIA on the RS232 board.
2010	8208	Get character from modem and put at location \$200C (8204 in decimal).
2013	8211	Put character stored at location \$200C (8204 in decimal) to modem.
2016	8214	Clear STCP receiver buffer. (Any characters currently contained in the buffer will be lost.)
2019	8217	Reset RS232 Interface's ACIA chip.

Whenever a program is to control STCP, the program should SYS 8205 (or JSR \$200D if machine language) to inform STCP that a program and not the keyboard is in control. STCP will respond with ">> PROGRAM CONTROL <<" message in the filename field of the status line.

To output an ASCII character to the modem:	
Basic	Machine Language
-----	-----
POKE 8204,A	STA \$200D
SYS 8211	JSR \$2013

To input an ASCII character from the modem:	
Basic	Machine Language
-----	-----
SYS 8208	JSR \$2010
A=PEEK(8204)	LDA \$200D

If you need to reset the ACIA:	
Basic	Machine Language
-----	-----
SYS 8217	JSR \$2019

STCP polls the modem under interrupt control and stores characters in a 100 byte buffer. Sometimes it is desirable to clear this buffer and require the user to reenter in response to a message. This can be

accomplished via:

Basic	Machine Language
-----	-----
SYS 8214	JSR \$2016

Detection of ACIA errors can be accomplished by peeking the *PFO* area of the status line:

Address		
Hex	Decimal	
-----	-----	
8002	32770	If inverse video P, then Parity Error
8003	32771	If inverse video F, then Framming Error
8004	32772	If inverse video O, then Overrun Error

An example which illustrates how a Basic program can control STCP is contained on the diskette.

Character Filter and Character Translation

There may be some characters received by STCP that you may find undesirable. For example, on the DEC 10 mainframe computer there is a text editor called SOS that we sometimes use to enter MAE source files when we are away from our PET. SOS's line format is line number, then a tab character, then the text. We found the tab character (hex 09) to be undesirable when downloading MAE files to the PET and wished we had a way to filter certain characters. So, we added a capability for the user to incorporate his own character filtering and translation software. At location \$201C is an address that points to a table within STCP. This is a 128 byte table that contains an entry for each of the 128 possible ASCII characters. The position of a particular character in this table corresponds to the characters hex value. For example, the hex value for the CARRIAGE RETURN character is OD. Thus the position in the table is the OD-th (13-th in decimal) byte in the table. At that location you will find the value hex OD. Some characters such as TAB (hex 09) have an entry in this table of 00. This is a null value which STCP uses as a filter indicator - thus filtering tab characters. It is also possible to encrypt data by providing an alternate value for the printable ASCII characters. The STCP as supplied filters only TABs and certain non-printable control characters. You may though modify this table for your own application. Application Hint: This table can be altered so that data is encrypted when transmitted and decoded when received in order to keep transmission private. We recommend that you only encrypt data between \$20 (space) and \$7A (lower case z) to avoid problems with control characters.

Change XON/XOFF Control Codes

STCP collects characters received from the modem in a 100 byte buffer. When this buffer fills to the 70-th character position, an XOFF is sent requesting that transmission be halted. This provides a 30 character safety margin for the response time of the host computer to process the XOFF. When the buffer is flushed down to the 70-th character, an XON is sent to resume transmission. This prevents loss of characters when other STCP functions such as reading or writing to disk and outputting to the printer occur.

Standard ASCII code defines XON and XOFF as follows:

XOFF = \$13 = Control S = Control code requesting a halt of transmission until an XON is sent.
 XON = \$11 = Control Q = Control code requesting a resumption of transmissions that was halted by a previous XOFF.

Some bulletin boards and host computers do not follow this standard and instead incorporate other codes. Fortunately, STCP stores the values of XON and XOFF at \$201E and \$201F respectively. You can change these values, to adapt STCP for those "non-standard" systems.

STCP Notes

- 1-) If in Full or Half Duplex transmission mode and saving to disk, nothing will be saved to disk until the first return character is received. This provides you with one line to initiate a host command to cause the transfer. This results in the command line not being saved which we consider very desirable.
- 2-) Basic and MAE files must have a line number as the first characters of each line. If a line number is not present, STCP will not store the line.
- 3-) When logging on to a host computer, it is standard practice to press the RETURN key a few times to get the host to output a message recognizing that you are logging on.
- 4-) To read the disk error channel, simply select the "D" Menu item and just press the RETURN key instead of entering a disk command.
- 5-) MAE write files are stored in an 8K buffer located at the end of the STCP program. When this buffer fills up or a close menu item request is initiated, the entire contents of the buffer is written to disk as a single save operation. If the file is longer than the buffer, STCP will write the current buffer's contents to disk and then prompt with a second filename.

- 6-) If you have to go thru two host systems to log on, such as TYMNET and MicroNET, Quick Read may not work to send characters to both. Quick Read should work after you get passed TYMNET and log on to MicroNet.
- 7-) The supplied diskette contains the following files:
- STCP.STARTER < Basic starter program that is used to configure STCP software.
 - STCP.EXE < 100% Machine Language program which represents the STCP communications software.
 - 9.NOTES < Items which we found after the manual was printed that may help clarify STCP concepts.
 - PROGRAM.CTLEX < Example which illustrates how to control STCP under control of a Basic program.
- For PEDISK II, these files are named: STCPST
STCPEX
9.NOTE
PGMCTL
- 8-) A Stock Market bulletin board, called Tickerscreen, has recently been made available free of charge - that is it might cost you just the cost of a phone call. Tickerscreen provides information on the Market and provides price quotations for 2000 NYSE Securities.
Phone Number: (212) 986-1660.
- 9-) The following are file types we suggest that you use when transferring programs between two PETs:

File to be Transferred	File Type
Basic Program	BASIC (0)
Machine Language Program	BINARY (2)
VisiCal File	ASCII (3)
WordPro File	BINARY (2)
MAE Source Program	MAE (1)

Reference Chart of STCP Locations

Address in		Description
Hex	Decimal	

		Entry Points:
2000	8192	Cold start entry.
2003	8195	Warm start entry.
2006	8198	Printer IEEE device number.
2007	8199	=00 if CBM printer, =FF if ASCII printer.
2008	8200	Printers secondary address.
		Miscellaneous:
2009	8201	ACIA configuration byte.
200A	8202	Lo, Hi length of buffer for MAE files.
		Basic/Machine Language control:
200C	8204	Basic character for get/put.
200D	8205	Set Basic control of STCP.
2010	8208	Get character from modem.
2013	8211	Put character to modem.
2016	8214	Clear modem buffer.
2019	8217	Reset ACIA.
		Miscellaneous:
201C	8220	Address of character set table.
201E	8222	XON control code.
201F	8223	XOFF control code.

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